



## CHAPTER II PRELIMINARY DESIGN

### LOCATION STUDY/ENVIRONMENTAL REPORT

#### SECTION 2-02

**2-02.1 PURPOSE.** A location study/environmental report is required for all projects of a complexity or environmental classification, such as environmental impact statement (EIS) or environmental assessment (EA), that would preclude the use of a conceptual study. A location study report is prepared to determine the most advantageous location and type for a proposed highway improvement based on project purpose and need and on engineering and environmental constraints, and is incorporated into a location study/environmental report by General Headquarters Design. A location study is not a programming function, rather it is a method to determine the most advantageous way of fulfilling the program intent. This does not preclude the necessity for sometimes studying additional portions of the routes beyond the limits of the section programmed or recommending a type of improvement not originally the intent of the program. Any deviation from or extension to program intent is set out clearly in the report. Location study reports are developed concurrently with the CE2 (open-ended categorical exclusion), to be reviewed by the FHWA, EA or EIS for the project. The results of the studies are written as a location study/environmental report by General Headquarters Design.

A glossary or terms used frequently in this section is given in [Subsection 2-02.7](#).

**2-02.2 LOCATION STUDY REPORT PREPARATION.** The Location Study Report (LSR) consists of two very distinct sections; the Purpose and Need (P&N) and the Alternatives Analysis. The P&N section is written at the commencement of the study as a separate document, prior to holding a prelocation study meeting. The Alternatives Analysis section is prepared following the prelocation study meeting and is combined with the P&N to form the LSR. The LSR is submitted by the district to the project development liaison engineer. A form for this use (see [Figure 2-02.1](#)) can be found in the Design Forms category of the Design forms on the computer system. An explanation of the information provided in the LSR follows. All information developed for the LSR must consider the environmental constraints identified during scoping prior to the prelocation study meeting as well as all subsequent information developed or received.

**2-02.2 (1) PRELIMINARY INFORMATION NEEDED PRIOR TO REPORT PREPARATION.** Upon initiation of a LSR, the district should submit two copies of a written request for environmental services to General Headquarters Design requesting preliminary screening and early constraint identification for a specified study area. A form for this use (see [Figure 2-02.2](#)) can be found in the Environmental/Cultural Resources category of the Design forms on the computer system. The study area limits will be defined by the district and should be large enough to accommodate the possible range of alternatives, including logical termini, that could be considered throughout the study. The necessary study area will be unique to each project and will vary in size based on length of the project, scope of possible improvement, the identified needs and the known physical constraints. The study area should be drawn on aerial mosaics and/or USGS quadrangle maps and labeled "Study Area Limits". There should be 10 copies of the maps submitted with the written request for environmental services. These maps will be used by the various environmental and cultural specialists to research and screen the area for known environmental and cultural constraints. This information will be returned to the district for transfer to the location study plates that will be included in the LSR and for use at the prelocation study meeting ([Subsection 2-03.2](#)) and the agency scoping meeting ([Subsection 2-03.3](#)). This information should be requested at least 2 months prior to the desired date for the prelocation study meeting or the agency scoping meeting, to allow ample time for the screening and constraint identification to be completed.

**2-02.2 (2) CONSULTANT PREPARED LOCATION STUDY REPORT.** In the event the district does not feel that they have adequate staff to prepare the LSR, the district should submit a draft P&N document to General Headquarters Design as part of the documentation used to support the need for additional professional services. If General Headquarters Design deems it necessary, they will submit the draft P&N document to the FHWA for review and comment prior to accepting the draft P&N. Once accepted by General Headquarters Design, the documentation to justify the need for additional professional services will be submitted to the Professional Services Committee for their concurrence. After concurrence of the Professional Services Committee, the procedures set out for consultant selection and contract implementation should be followed for the solicitation

and selection of the consultant. As part of their LSR preparation, the draft P&N may be modified and/or updated as additional information is known.

- 2-02.3 PURPOSE AND NEED DOCUMENT.** The district staff works with General Headquarters staff and others to formulate a project P&N document. The P&N document is extremely important in the development of any project since it is the basis that establishes why MoDOT is proposing to spend large amounts of taxpayers' money. In other words, it justifies the need. The project P&N document is the basis for the range of alternatives that will be considered, their in-depth analysis and the ultimate selection of a preferred alternative. Without a well-defined, well-established and well-justified P&N, it becomes difficult, if not impossible, to determine the range of reasonable and prudent alternatives to study. More importantly, it may be impossible to dismiss the "no-build" alternative as undesirable.

The P&N document for a project is comprehensive and specific. This document completely describes the existing facility, if there is one, and all of the facility need plus local and regional needs associated with the facility. The P&N document identifies the transportation problem(s), safety issues, roadway deficiencies and planned development. Other possible elements are system linkage issues, modal interrelationships, and legislative directive. Each project needs to be evaluated individually to determine which elements contribute to its P&N, which will be unique to that project. For a very simple project, the entire P&N may be existing deficiencies, as with some bridge replacement jobs. For complex projects, the P&N may be a combination of all of the above items and additional needs not listed here.

It is possible that after completing a thorough P&N evaluation, it will be determined that a P&N sufficient to justify a project does not exist at this time. In this event, the process and decisions reached should be documented and brought to the attention of the public officials and/or the public, as necessary. It is for this situation that we do not begin consultant negotiations before the P&N is accepted.

The draft P&N document, accepted by General Headquarters Design and the FHWA, should be made available at the prelocation study meeting. Input from the public and others (e.g., agencies) at the prelocation study meeting may reveal information that causes the P&N to be revised. The P&N may continue to change until the final environmental document. The following is an explanation of the major components of the P&N document. The P&N document begins with a detailed description of the project area and the existing facility type. The remainder and bulk of the document details the project need.

**2-02.3 (1) PROJECT DESCRIPTION.**

- 2-02.3 (1) (a) PROJECT HISTORY.** This section includes a summary of how the project was identified in the planning process and any public involvement to date including involvement with any Regional Planning Commissions or Metropolitan Planning Organizations (MPOs). In an urban area, include a discussion of why the project was included on the current Regional Long-Range Transportation Plan. The project history should highlight the relative importance of this project to the local area, the region and the state.

- 2-02.3 (1) (b) PROGRAM DATA.** The most current program data is tabulated. This information is used as a comparison to the cost estimates developed for the feasible alternatives. The fact that a project has been programmed is not justification for the purpose and need. The solution that has been programmed may not address the purpose and need either. The purpose and need is defined for the study independent of the program data, and alternatives should address the purpose and need for the study, not fulfill the program.

- 2-02.3 (1) (c) DESCRIPTION OF EXISTING TRANSPORTATION FACILITY(IES).** The description of the existing facility(ies) should include tables detailing the condition of the roadway and any bridges and railroad crossings in the project limits.

- 2-02.3 (1) (d) PROPOSED DESIGN CRITERIA.** The study considers both construction year and design year traffic including residual traffic remaining on the existing facility. Traffic data for existing routes near the proposed corridor, as well as all intersecting state routes, need to be analyzed. All traffic information is requested from the Office of Transportation Management Systems as early as possible so that the traffic information is available as the study progresses. Early submittal of the request is especially important

where an origin and destination (O & D) study may be necessary.

The design criteria used to evaluate the alternatives considered in the study are listed in a table. [Figure 4-04.1](#) is used for determining the appropriate design criteria based on the designated functional classification, the traffic projection and the terrain. In addition, the district traffic engineer is consulted for the anticipated operating speed of the proposed facility. The anticipated operating speed may have an effect on the design speed used. Anticipated POSTED speed is NOT to be discussed in location study/environmental reports.

It is desirable to design rural divided roadways with a 70 mph [110 km/h] design speed. Projects which have minimal topographic features which could categorize the roadway as "rolling" or "mountainous" (see [Figure 4-04.1](#)) should still use a 70 mph [110 km/h] design speed. Segments of these roadways which contain features which can not satisfy these design criteria should be addressed by the Design Exception Process described in [Subsection 2-01.9](#). The majority of the roadway can still be designed to this design criteria in an economical manner through use of this method. However, where a considerable percentage of the roadway's length is in the "rolling" or "mountainous" category, the roadway should use the corresponding design criteria for the terrain encountered with appropriate design exceptions.

- 2-02.3 (1) (e) SYSTEM LINKAGE.** A brief discussion of the link that this project plays in the Missouri Transportation Plan, including a description of the facility at either termini, is provided. All major actions (whether federal, state or local) in the vicinity of this project are discussed. This discussion should include what stage in NEPA clearance these projects are.

If there is a temporary gap between improvements such that logical termini are not readily apparent, the report documents the schedule for closing the gap between improvements. Logical termini can include other state highways or traffic generators in the project area. Logical termini must be set on all projects so that the segment being studied demonstrates independent utility and does not require actions beyond the scope of the proposed action.

It may be that system linkage is also an element of the P&N. As such, there needs to be a separate discussion of the need in the next section of the report. This section is strictly to clarify how and where this project fits into the state of Missouri highway system.

- 2-02.3 (2) OVERVIEW OF PURPOSE AND NEED.** A general overview, or listing, of the elements of the P&N is desirable. A detailed discussion of each item in the list should follow. Only list and discuss those items which are considered to be a problem associated with this project. For the purposes of this manual, safety and capacity are assumed to be elements of all P&N documents. However, if a project does not have a safety or a capacity problem, then the accident data and the level of service (LOS) data should be summarized after System Linkage and before the Overview of Purpose and Need. For all other items listed and described hereafter, if they are not a need for the project, then they do not need to be discussed in the document in any manner.

For long projects, different segment may have different P&N's. For example an add-a-lane project that includes a bypass of a community may have one P&N for the rural add-a-lane segments and a separate, different P&N for the urban bypass segment.

- 2-02.3 (2) (a) ACCIDENT DATA AND SAFETY ENHANCEMENTS.** An accident rate is calculated, as shown in [Subsection 201.5](#), for each project and compared to the statewide rate for a similar class of highway. Accident rates are calculated for logical segments of long corridors based on change in traffic volume or site conditions. The statewide rate can be obtained from the district traffic personnel. A 5-year injury rate and fatal accident rate are also calculated by substituting the 5-year total injuries value or total fatalities value for the 5-year total accident value in the formula. If these rates are greater than the statewide rate for a similar class of highway, the comparison is included in the study. The statewide rates used in the assessment are provided in the report.

Breaking a long project into segments will help in evaluating why accident rates are high. There may be a high accident rate going through a city while the rural segments show no problem. Additionally,

sometimes accidents will be concentrated at specific intersections which might imply spot locations with safety problems rather than the entire route having a problem.

Bicycle/pedestrian facilities which are to be provided in the project should be discussed.

- 2-02.3 (2) (b) ROADWAY CAPACITY.** Existing roadway capacity is discussed in terms of Level of Service (LOS) as calculated with the Highway Capacity Software (HCS). Calculations are presented for the existing facility (the no-build option) for both construction year and design year. If there is a significant difference between the date of the study and the anticipated construction year, an analysis for existing traffic volumes is also included. LOS is evaluated at all intersections with state highways or with cross roads having sufficient traffic to warrant concern. The LOS is also calculated for the ramps, the ramp termini and the weaving areas of an interchange, when applicable.

Based on the project length, change in facility conditions or changes in traffic volumes, the LOS calculations are done on logical segments in sequence. All information is summarized and discussed as it relates to the need of the project. Generally, MoDOT considers a LOS of C or better acceptable for rural roadways and a LOS of D or better acceptable for urban roadways in the design year. However, each project should be considered individually.

- 2-02.3 (2) (c) ROADWAY DEFICIENCIES.** A complete discussion and tabulation of roadway deficiencies needing corrections is presented. This may include substandard vertical grades, horizontal or vertical curvature, pavement or shoulder width, stopping sight distance, clear zone, and so on. Any deficiencies discussed should be tabulated in some manner so that the reader knows where the deficiencies occur and what percent of the total length is considered deficient.

- 2-02.3 (2) (d) ADDITIONAL JUSTIFICATION.** Additional information such as needs associated with system integrity, flooding, legislative directive and public request, planned development or any other identified need may be used to justify the P&N of the proposed improvement. Each item used should be discussed separately and in sufficient detail that the reader can understand the extent of the concern.

- 2-02.4 ALTERNATIVES ANALYSIS.** This portion of the LSR contains documentation of how the study has progressed from a P&N to a preferred alternative. Beginning with the first wide range of alternatives considered, which are developed following the prelocation study meeting, this section should explain in detail all alternatives considered in the development of the project in enough detail to justify why they were either dismissed from further study, modified, or carried forward. Sketches of all stages of alternative development should be included. As the range of alternatives is studied and screened down to a reasonable number, the screening process used should be documented.

Alternative corridors are defined by the district and are set at a width that will accommodate the maximum expected right of way width plus some additional width to allow for minor modifications. For example, for a new four lane divided highway, the minimum right of way width required by MoDOT standard is 250 ft. [76 m], but in an area of hilly terrain it may be normal to acquire 350 to 400 ft. [107 to 122 m] of right of way to accommodate the cut and fill slopes. In this case, the alternative corridor width could be 400 ft. plus 200 ft. for adjustments, which is a 600 foot corridor [122 m plus 61 m for a 183 m corridor]. Each project will need to be analyzed for what the district designer feels is a reasonable corridor width. In the case of a complex EIS, it may be advisable to look at preliminary study alternative corridors of 1000 ft. [305 m] or more which are later adjusted to final study alternative corridors of possibly 500 feet [152 m]. As the study progresses, environmental analysis is performed on these alternative corridors and ultimately detailed analysis is performed on the corridor for the preferred alternative. So it is imperative that the corridors be a reasonable width minimizing the work effort required but wide enough to accommodate minor adjustments in alignment which normally occur during the study or preliminary design. The

final alternative corridors that are analyzed for each alternative are to be shown and labeled on the LSR plates as "Corridor Limits". During all phases of study, corridors need to accommodate the ultimate expected facility even if the initial project will be only a stage of the ultimate.

Significant points along the routes are numbered or labeled on the maps or mosaics for easy reference in the discussion of the alternatives. These points may be at intersections, bridges, county lines, direction reversals, alternate crossings, or any other point deemed significant to the route.

Within the corridor limits of the preferred alternative, a full environmental evaluation will have been completed prior to the final environmental document being approved. However, this does not mean that the corridor is "clear" of future environmental obligations. Alignment modification within the final corridor may impact areas or sites previously evaluated and identified, but not "cleared" because the original right of way limits needed would not have impacted it. The final corridor identified will clearly show the area studied and evaluated as a part of the environmental document preparation. Any modification to the alignment that would shift the improvement footprint outside of this corridor must go through all of the environmental analysis as if it were a new corridor.

**2-02.4 (1) FINAL STUDY ALTERNATIVES.** The LSR generally includes consideration of several reasonable alternative locations along with the "no build" alternate. In urban areas, a TMS alternative may deserve consideration. The minimum number of "build" alternates carried forward in the report for consideration is two. The alternates proposed must be based on engineering and environmental constraints and must be reasonable build alternates. Sufficient information must be provided concerning each alternate to clearly establish the fact that the preferred alternate is the best.

**2-02.4 (2) COST ESTIMATES.** Complete right of way, utility adjustment, and construction cost estimates are an essential part of the analysis of alternates. Estimates are prepared for each alternate under consideration. All estimates should be broken into segments that correspond to the description of the alternates. The cost estimates should be broken into the following categories:

- Grading
- Paving
- Bridges
- Miscellaneous
- Utilities
- Right of way (include relocation costs as a separate item)

Also include with the estimates a tabulation of displacements (including businesses) for each alternate. This includes type and number of people (including employees) involved.

**2-02.4 (3) SATISFACTION OF THE PURPOSE AND NEED.** All final study alternates must be discussed in terms of how they satisfy the stated P&N of the project. In the event that capacity is stated as an issue in the P&N, then there needs to be a capacity and operational analysis of the final study alternates. LOS is calculated for logical segments for both construction year and design year traffic for the proposed facility. If the proposed facility is on relocation and the existing route will remain in service, the LOS must also be calculated for the traffic volumes (construction year and design year) remaining on the existing route. LOS must also be calculated for all major intersections for both years. When staged construction is involved, LOS must be calculated for the various stages.

**2-02.4 (4) LAND USE WITHIN THE STUDY AREA.** This refers to how land within the study area is used. It could include agricultural, commercial, industrial, residential, conservation or others uses, or a combination of these.

Special land uses should be identified. They generally include schools, churches, airports, golf courses, water and sewage treatment plants, commercial areas, watershed projects, undisturbed areas of natural flora, and other features of environmental significance.

Public lands (possible Section 4(f) or 6(f) lands) are defined as publicly owned lands having national, state or local significance which may include any of the following:

- Public parks and national forests.
- Recreational areas.
- Wildlife and waterfowl refuges.
- Historic sites (privately or publicly owned).
- City parks and local facilities available to the general public.
- Department of Conservation land.

Section 6(f) lands are parklands which have been funded with monies from the Land and Water Conservation Fund through the National Park Service. General Headquarters Design has a current listing of parks, by county, that have Section 6(f) funds invested in them.

A description of the public areas or known historic sites, including maps, boundaries, area, master plans, local contacts, etc., are provided in the report so that coordination can begin with the FHWA regarding Section 4(f). A thorough investigation is made to determine the effect of the proposed location on these developments and lands. Land use plans and comprehensive traffic studies should be considered. Alternate locations must be considered to avoid Section 4(f) or Section 6(f) lands to possibly justify why an alternate impacting such areas must be selected. General Headquarters Design will assist the district in coordinating efforts involving public lands.

The conceptual stage relocation information, furnished by district right of way personnel for the various locations studied, is summarized in the report. A statement as to the social, economic, and environmental effects the location will have on any community is included by General Headquarters Design.

Specific locations of above or below ground petroleum storage tanks or other hazardous waste sites are identified. [Figure 2-04.2](#) lists land uses typically associated with hazardous waste sites. Every effort must be made to avoid identified waste sites on the selected location unless the cost to mitigate the sites is less than that to avoid them.

When none of the alternates include a significant encroachment on any flood plain, a statement is included to that effect. If any alternate includes significant encroachment on the flood plain, it is identified and discussed in accordance with 23 CFR 650A.

The necessity of Section 404 permits should be indicated. A discussion on the effect that each of the alternates will have on wetlands is also included.

The presence of any known archaeological and historical sites are described. Any buildings or other structures which are nearly 50 years old or greater, including bridges scheduled for replacement, are noted.

These factors are an important part of the location study/environmental report and thorough investigation at the location stage will avoid complications at the design stage.

- 2-02.4 (5) ENVIRONMENTAL SUMMARY.** The location study report should summarize all environmental work completed. For example, if wetlands have been identified by General Headquarters Design, there should be a statement to the effect that areas identified as wetlands have been identified by General Headquarters Design and have been shown on the attached location plates, or that a records search had been performed by General Headquarters Design, the result of which was there are no known archaeological sites in the vicinity of this project. This information will be expanded on by General Headquarters Design for the environmental document, but the summary in the location study report will be a quick indication during the review as to whether adequate environmental work has been completed.

**2-02.4 (6) CONSTRUCTION IMPACTS.**

**2-02.4 (6) (a) UTILITIES.** A brief discussion is included to describe any major transmission lines, fiber optic lines, pipe lines, sub-stations, railroads, water or sewage treatment plants or any other utility of significance in the vicinity of the improvement.

**2-02.4 (6) (b) HANDLING TRAFFIC.** The method of handling traffic during construction is an important consideration. The need for short construction bypasses or long route bypasses or route closures is discussed here.

**2-02.4 (6) (c) DISPOSITION OF EXISTING ROUTE.** The disposition of the existing roadway should be considered very early in the preparation of the study. There are many ways in which to dispose of the existing roadway. Some of these result in the roadway being retained by the commission for its use and others may result in transfer of the roadway to a local government agency or even total abandonment. [Subsections 4-02.15 \(1\)](#) and [4-02.15 \(2\)](#) give a good description of the various options which may be considered when disposing of the existing roadway. These sections also give a description of when each of these options should be considered.

Decisions regarding the disposition of the existing roadway will have a large impact on the amount of effort which needs to be focused on this area of the study. Alternatives which call for the retention of the existing roadway by the commission will not need the same level of local government agency involvement and amount of discussion in the report as those which call for the roadway to be transferred to another agency.

The discussion of alternatives which call for the existing roadway to be retained by the commission will need to include the comments of the local government agencies and show that they were taken into consideration while developing the alternatives, but will not require the concurrence of the local government agency in order to be considered viable. Alternatives which call for sections of the existing roadway to become the responsibility of the local government agency will require their concurrence in order to be considered viable. The discussion included in the report for these alternatives should fully discuss the level of effort which has been made to involve the local government agencies in the decision to transfer the responsibility to them and written documentation of their concurrence in that decision.

Where there is a high probability that portions of the existing roadway will not be incorporated into the new facility, but will need to be remain in place to serve local public or private interests, contact with the local governments should be made as soon as possible to gain their comments regarding the possible options for the disposition of the existing roadway. In this case, the initial contact with the local governments should occur as close to the same time as the prelocation study meeting or the agency scoping meeting as possible. The local government's comments regarding the disposition of the existing roadway will need to be taken into account as the alternatives are developed for the study.

**2-02.4 (6) (c) 1. CONVEY TO LOCAL GOVERNMENT AGENCY.** Alternatives which call for the local government agency to accept responsibility for a section of the existing route will need the concurrence of the local government agency before it can be considered as a viable alternative for the study. Even though this may be the best option for disposing of the existing roadway, the alternative will need to be revised to include another method of disposal if the local government agency is not receptive to accepting responsibility for the section of existing roadway.

In order to document that the local government agency has given its concurrence in accepting the responsibility for a section of the existing roadway, some form of written documentation is needed. The best form of written documentation would be an agreement executed by the local government agency and the appropriate department staff which outlines the project in general terms and describes the general location of the sections to be accepted by the local government agency. If an executed agreement cannot be obtained, the next best form of documentation would be a copy of a resolution or an ordinance which conveys the governing body's intention to accept the sections of existing roadways and gives a general description and location of the sections to be accepted and a general description of the overall project.

If neither of these documents can be obtained, a letter from the local government agency, addressed to the district engineer, stating that they agree to accept responsibility for the sections of existing roadway will be acceptable. Even though this form of documentation is not as desirable as the other two, it will convey the intention of the local government to accept the sections of the existing roadway. This letter should also provide a general description of the location of the sections to be accepted and the project in general.

All three forms of documentation should also include language which indicates the local government agency will execute a roadway relinquishment agreement at the time the plans are developed in enough detail to allow the transferred sections to be described in specific terms. The specific terms of the roadway relinquishment agreement will include the right of way limits, station limits of the sections to be transferred, estimated maintenance costs, etc. Therefore, execution of this agreement will not be possible until the Change in Route Status Report has been approved. A detailed description of the process for completing the Change in Route Status Report and the roadway relinquishment agreement can be found in [Subsection 4-02.15](#).

Once the written documentation expressing the local government agency's willingness to accept the sections of the existing roadway is obtained, it should be included in the study. This documentation may be included as an appendix and referred to in the study.

In the event that the local government agency refuses to accept responsibility for the recommended sections of existing roadway or will not provide the necessary written documentation, the alternative will need to be revised to include some other method for disposal of the existing roadway. These other methods might call for the sections of existing roadway to be retained in the state highway system or to be abandoned completely.

In any case, if none of the other methods listed in [Subsection 402.15](#) for disposal of sections of the existing roadway can be utilized and the local government agencies refuse to accept responsibility for them, then the study must indicate that this alternative is not viable for these reasons. This alternative will then receive no further consideration in the study.

- 2-02.4 (6) (c) 2. CONVEY TO ADJACENT PROPERTY OWNERS.** Alternatives which recommend that sections of the existing route be conveyed to adjacent property owners should include a discussion of the efforts which were made to transfer the roadway to a local government agency prior to choosing this method of disposal. The report should then focus on the efforts made to contact the property owner and discuss their willingness to accept the section of the existing roadway. If possible, the property owners written concurrence in these decisions should be included in the report. If it is not possible to obtain the written concurrence of the property owner, but verbal commitments can be obtained this alternative can still be considered as viable. If the property owner strongly objects to this method of disposal of the existing route then one of the other methods for disposal listed in [Subsection 402.15](#) must be chosen for the alternative to be considered as viable. If no other method of disposal can be utilized, then the alternative will receive no further consideration in the study.
- 2-02.4 (6) (c) 3. ABANDON THE ROUTE.** When no other method of disposing of the existing route can be found then the option of abandonment should be explored. The report should include a discussion of the opinion of the District Counsel or Chief Counsel's Office as to the ability of the department to successfully abandon the existing route. The report should also include discussion of the efforts that were made to seek some other methods for disposing of the existing route and a summary of the discussions with local government agencies and adjacent property owners about the disposal of the existing route. If the legal opinion is that the department can successfully abandon the section of the existing roadway, then this can be considered as a viable alternative for the study. However, if the legal opinion suggests that the department can not successfully abandon the existing roadway and no other method of disposal can be found, then the alternative can not be considered as viable. This alternative will then receive no further consideration in the study.

- 2-02.4 (7) COMMENTS AND RECOMMENDATIONS.** The district is to provide a brief summary of the prelocation meeting in this section. This summary should include the date of the meeting, the location and the number of people attending, as well as a summary of comments received either during or after the hearing.

The location study/environmental report addresses the ultimate facility. If construction of the facility will occur in stages, that should be discussed in this section with the proper amount of information to document why a portion of the facility is not needed until in the future.

If a preferred location is going to be stated, that will occur in this section along with the reasons for the selection.

- 2-02.4 (8) ATTACHMENTS TO THE LOCATION STUDY REPORT.** The narrative portion of the report is followed by:

- Estimate sheets, if the estimate is not carried in the body of report (estimate should be as complete and accurate as possible, including right of way, utility and construction costs broken down into segments that correspond to the description of the alternates)
- General location map (copy of the county map showing the entire project limits on one sheet) labeled Plate I
- Typical section
- Any special drawings which might be needed for some particular report
- Location sketch (aerial mosaic, USGS quadrangle sheets, etc.) showing the various alternates considered and any constraints, labeled consecutively starting with Plate II.

Results of environmental scoping, including wetlands, historic sites, hazardous waste, threatened and endangered species habitat, and archaeological sites are identified on the location sketch. Archaeological sites are not located specifically since that information is sensitive and not to be publicized.

In order to standardize color coding in the report, red should be used for the recommended location, green for the first alternate, and blue for the second alternate. Brown is used for any previously approved location and yellow for existing MoDOT routes. Where stage construction is contemplated, the second stage work should be shown as a dashed line. Work materially beyond the limits of the program should also be shown with a dashed line, using a different length dash than for stage construction. Color coding is not required; different line symbols may be used. It should be easy to identify the various alternates either by color or by distinctive symbols.

## **2-02.5 LOCATION STUDY REPORT PROCEDURES.**

- 2-02.5 (1) LOCATION STUDY REPORT WITH CE OR CE2 ENVIRONMENTAL CLASSIFICATION.** Three (3) completed copies of the report and 11 copies of the plates are submitted to General Headquarters Design. Following the signature of the preparer, a section is included for the recommendation or comments and signature of the district engineer. If necessary to add more detail, the district engineer's comments may be submitted with a separate letter.

General Headquarters Design combines the location study report information received from the district with the scoping results into a location study/environmental report. The location study/environmental report is reviewed by General Headquarters Design. The comments of General Headquarters Design are sent to the district engineer in letter form if they are of a significant nature along with the preliminary location study/environmental report. The district then reviews the report and provides their recommendations to General Headquarters Design. The report, along with a recommendation from General Headquarters Design, is sent to the State Design Engineer for approval. Upon approval, a copy of the location study report and the CE2 form (available on the LAN) is sent to the FHWA for comment and signature. Upon receipt of the FHWA's approval of a CE classification, the district is advised to hold a location public hearing if required or advisable. Preliminary plan design can then begin. If the results of the FHWA review are to reclassify the project as an EA, the procedures of [Subsection 2-02.3\(2\)](#), are followed.

**2-02.5 (2) LOCATION STUDY REPORT WITH AN EA OR EIS ENVIRONMENTAL CLASSIFICATION.** The location study report is written to the attention of General Headquarters Design for review. Upon division and district concurrence, this information is then incorporated into the draft EA or draft EIS report by General Headquarters Design. When the draft report is completed, it is reviewed by the project development liaison engineer, General Headquarters Design and district personnel. All comments are reviewed by General Headquarters Design and a final draft report is prepared. The final draft report must include a draft Section 4(f) evaluation if applicable. This report is sent to State Design Engineer for review. The alternate locations are then discussed with upper management and/or the commission by General Headquarters Design as needed based on the complexity of the project. A copy is then sent to the FHWA for comment and signature. Upon receipt of the FHWA's signature on the draft EA or EIS, the district is instructed to hold a location public hearing. **The location public hearing can not be scheduled until a signed draft report is received.** Location public hearings are discussed in [Subsection 2-03.4](#) and [2-03.9](#). The district provides a transcript of the hearing recommendations and summary, as noted in [Subsection 2-03.10](#), to General Headquarters Design for consideration in a final EA or EIS report. Phase I and Phase II archaeology, if needed, must be completed on the recommended alternative prior to the final EA or EIS being completed. The district must obtain property owner permission prior to archaeological work. In addition, the final EA or EIS must include the final Section 4(f) evaluation if applicable. The final document may be discussed with upper management and/or the commission by General Headquarters Design as needed. This report will then be sent to the FHWA for approval. Upon receipt of the FHWA's approval of a Finding of No Significant Impact (FONSI) for an EA or of a Record of Decision (ROD) for an EIS, the district engineer will present the study to the commission for their final location approval. Preliminary plan design can then begin. (There will be approximately a 45-day period between the final EIS being approved by the FHWA and the receipt of the ROD.)

The district is responsible for reproduction of all attachments to the location study report for General Headquarters Design through distribution of the final location study/environmental report. In some instances this may involve approximately 100 copies of the plates. The district should be coordinating this with General Headquarters Design during the preparation of the report and plates.

**2-02.6 FUTURE CONSIDERATIONS.** Once an EIS is approved with a ROD, an EA is approved with a FONSI or a CE2 has been reclassified as a CE by the FHWA, the requirements of NEPA have been met. However, a project may not be environmentally cleared at this point. Some issues may still need to be resolved, such as Section 404 permitting by the Corps of Engineers. Districts need to maintain contact with General Headquarters Design to ensure that all environmental permits and clearances have been obtained.

Once a ROD or FONSI is approved, the environmental document has a shelf life of three years. This is not a problem if project development (detailed design, right of way acquisition, etc.) proceeds in a timely fashion even beyond three years. However, if the project is shelved for a number of years without any major project development, an Environmental Re-evaluation may be required by the FHWA. The Environmental Re-evaluation updates the project scope and the environmental context of the proposed action. An Environmental Re-evaluation may resemble an EA in content. It focuses on the changes in the project, its surroundings and impacts and any new issues identified since the ROD or FONSI was approved. It may be decided by the FHWA that a supplemental EIS or EA is not needed, or the FHWA may indicate that the EIS or EA process must be restarted and completed. The Environmental Re-evaluation should be initiated by the district through General Headquarters Design.

The cultural resources evaluation for structures looks at those which are 50 years old or older at the time of the writing of the document. As project development may continue for several years, structures that were less than 50 years old in the document may be 50 years old or older at the time of right of way acquisition and will need to be re-evaluated for their significance. The district needs to maintain contact with General Headquarters Design during the project development process.

## **2-02.7 GLOSSARY OF TERMS.**

**Corridor:** A band of varying width, different for each project, that is used in the environmental document to represent the final study alternatives. The corridor is wide enough to accommodate the maximum expected right of way plus contains adequate room to allow for minor modifications of the alignment.

**Draft Environmental Impact Statement (dEIS):** The first draft of an environmental impact statement that is made available to the public and review agencies for their comment following the FHWA approval.

**Environmental Impact Statement (EIS):** The disclosure document for a project study that details the known and anticipated impacts on an area's natural, cultural, social and economic environments.

**Final Study Alternatives:** The final study alternatives are presented and evaluated in the environmental document. They are the preliminary study alternatives that are found to satisfy the purpose and need and are the least environmentally, economically and socially damaging to the area. The final study alternatives are presented to the public at the Location Public Hearing.

**FONSI:** Finding of No Significant Impact. The FONSI is the conclusion of the EA process. Once the FONSI is signed by the FHWA, the MHTC can approve the location.

**Location Approval:** Location approval is granted by the Missouri Highway and Transportation Commission at one of its' regular monthly meetings. Location approval can not be granted until after a FONSI for an EA or a ROD for an EIS has been received. For CE projects, an approved conceptual plan is required prior to location approval. For EA or EIS projects, location approval is required before preliminary plan design can begin on the selected alternative.

**Preferred Alternative:** If the draft environmental document designated one of the alternatives as being MoDOT's choice, that alternative is called the Preferred Alternative in the document and on the maps. The preferred alternative must have justification stated in the document which indicates why it is the preferred for the environmental as well as social impacts and for economics both to the department and the community and for engineering design and safety. The preferred alternative must take all of this into account and be the best choice overall.

**Preliminary Study Alternatives:** Preliminary study alternatives are developed after receiving input from the public at the prelocation study meeting and after refining the Purpose and Need statement. They represent the range of possible feasible solutions.

**ROD:** Record of Decision. The ROD is the conclusion of the EIS process. Once the ROD is received, the MHTC can approve the location.

**Selected Alternative:** In an EA, the final document must declare a selected alternative. This alternative selection is made after the Location Public Hearing has been held so that the selected alternative can take into account all substantive public comments. For an EIS, the term "selected alternative" is only used in the ROD.

**Study Area:** The area defined at the beginning of a location study which is used by the environmental specialists for preliminary screening, scoping and early constraint identification.

**Transportation Systems Management (TSM):** Measures taken to improve the operation or efficiencies of a transportation system, usually small scale improvements that focus on improving existing systems such as traffic signals or changes in access.